CAUSAL RELATIONS BETWEEN NATURAL RISK AND BUSINESS RISK

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After a period marked by economic and financial crisis, the objectives and the priorities focused on restoring the balances, the correlations and the proportions of macroeconomic policy makers have focused attention to optimizing the relationship between man and nature. The environmental crisis installed affects the variables of the global economy system and compared with the economic crisis, its consequences are more perennial, more complex and dangerous. Environmental crisis management is based on truthful, complete and current informations regarding the interdependencies between natural risk and business risk within the system of risks that accompany our individual and societal existence.

Keywords: system risks, pure risk based on natural, natural risk with anthropic determination, risk-cause, risk-effects, business risk.

JEL codes: M21, Q51, Q53, Q54, Q56

The general coordinations regarding the natural risk

In the system risks, the natural risk is part of the range of pure, uncertain risk, in its many forms that determine and influence the life and work of the individuals, businesses, environmental. The pure risk is the result of natural major forces action and/or determining the psycho-socio-economic and political (anthropic)[137]. If, initially, in economic theory was made the opinion that this type of risk is not foreseeable danger to society[138], today, environmental deterioration, climate change and the knowledge economy becoming more involved in environmental management, bring to light new features of the pure risk. So, in some cases, the predictability of their achievement is very low or even zero, but in most of the cases, the expert forecasts indicate the potential risk; what is uncertain and difficult to quantify, is the severity and the extent in time and space effects.

A significant feature of the pure risk is the result of achieving: if the risk decision can result in gains or losses, in situation of the pure risk the purpose can only be negative, destructive, harmful or even disastrous. The random element in such risks determine the difficulty or even inability boundary and assessing the possible losses and the control of the risk.

Natural risks can be:

- Pure, natural based: earthquakes, hurricanes, floods, volcanic eruptions, sea currents, solar radiation, dynamic factors of climate (atmospheric circulation, monsoon circulation, etc.).
- With anthropic determination (economic, social, political, psychological): air pollution, greenhouse effect, air humidity, ozone layer, acid rain, atmospheric phenomena venture with slow onset (arid climate, desertification, snow, ice , etc.)..

Each of those risks is treated in interrelation of cause and effect; the causes can be varied, the effects also; can not be said that one issue has caused only a consequence, the spread is imminent, in time and space. Causality and determination of the risks is certified and that, in literature but in real life, both the causes and the effects are considered risks - for example, the risk of flooding – risk of an area calamity. Thus each risk is engaged in the risk management

[137] Danu, M.C., Business Risk, Plumb Publisher, Bacău, 2001, p.71.
[138] Colson, G., Gestion du Risque, E.A.A., Paris, 1995, p.21-28.

system so that, the effect a type of risk is due to another instantaneous, short or long time, and so on.

The effects of the business risk – causes of the natural risk

Pure natural risks based stem from accidental or fortuitous events, depending on environmental vulnerability, hovering mostly beyond the decision makers and others involved. An important aspect is the change in socio-economically produced by major risks, in terms of production, consumption, distribution of wealth nations. It should shift to small business consumers of energy and raw materials, less polluting, and focusing attention to recycling and reusing the consumer goods as long a time. It also is important to establish the human efforts towards the maintenance and preservation, cultural heritage, artistic, ethnographic, scientific, etc.. and the protect to the contact with pure risks, potential major.

If the pure natural risk are the least caused by the human factor, the pure risks with anthropic determination are generated by the human activity, the costs of their achieving being incurred in present and the consequences in future. Thru size, scale, stretching across time and space, the pure risks with the anthropic determination can be major (high dimension and low frequency) or minor (some of which take place at the enterprise level).

Given the period 1987-2007, the main trends in manifestation of the risk associated or derivatives from the business environment and their impact on the environment were[139]:

- In 1987 the population had a significant impact on reducing ozone, but the situation improved in 2007; as a result of increases the consumer demand, during 1987-2007, increased emission of gases, having negative impact on climate change; if air pollution in 1987 was notable, particularly in urban areas in 2007, amid increasing the urbanization, grew the degree of pollution. The water pollution is an another negative effect of the irrational human intervention on environmental conditions and ultimately on their living conditions. If in developed countries the purification, the water treatment stays in the spotlight makers to ensure a healthy water, in poor countries raising problems in connection with the water sufficiency. The water pollution, may have the forms: toxic, bacterial oxidative, thermal, it is difficult to master or to control, have harmful effects on the human and animal health, leading ultimately to address other serious risks: the emergence of diseases, diseases - cholera, hepatitis, etc.. the disappearance of aquatic life, atrophy of body functions.
- At the beginning of the period, the agricultural production had a negligible influence on the ozone layer, but methyl bromide in 2007 was an important part of the decline of the ozone layer; in the period 1987-2007 the agricultural production has contributed to climate change through emissions of methane and N2O and lately by their growth; if in 1987 the agriculture affected air pollution by emissions of ammonia and pesticides, in 2007 it was found that these emissions have increased proportionally with increasing the agricultural production. The agriculture, through intensive and irrational use of the pesticides, herbicides, artificial fertilizers, growth promoters, affects surface freshwater, soil, shallow groundwater, and long-term, deep water reserves, spontaneous and cultivated wildlife and vegetation, and on, the food, so the man. Outside the landscape change, the modern agriculture, based on intensive technologies and techniques developed for land use and farming industries implicitly assumes recourse to mechanization, use of chemical fertilizers, the substitute feed, etc.., new means genetic selection of species, varieties, etc..
- The deforestation and forest fires affecting had a negligible influence on the stratospheric ozone decline over the period 1987-2007 but, contributed to the continued growth of GHG emissions; to the degree of air pollution, the deforestation especially forest fires have negatively impacted by CO, PM, NOx. One of the atmospheric risk phenomena with slow developping is the desertification. Among the causes of desertification are important: the global or regional climate

[139] Global Environment Outlook GEO - 4, Environment for development, UNEP, 2007, p.45

change, over pasture, deforestation so negative human involvement in the use of space in which they live and work; the propagated risks are: massive soil erosion and, sooner or later the desertification. The consequences are the most severe on the natural environment and, further, on the lives of populations in developing countries who choose the alternative of adaptation to conditions at the bearable limit or the abandonment of their nomadic life and anchoring into the sedentary life of a community. The progressive achievement of this type of risk has such profound and lasting implications on the individuals, both in terms of the rudimentary lifestyle, even primitive, with all ensuing gaps and the psychological risk with fingerprints on subsequent generations.

- During the reported period, the industrial production had an enhanced influence on the quality of the environment, to the ozone layer and climatic changes, due to the lower emissions; in terms of impact on the air pollution, if in 1987 he was important, in 2007 this risk had dispersed due to the increasing industrial production in some regions of the world and decreasing in others. Direct result of air pollution are the acid rain that threaten the forests and the housing, agriculture, the lakes (extinction of the lacustrine fauna), etc.. Prevention or mitigation of this risk is only possible by limiting emissions of sulfur dioxide from large industrial facilities or transportation. Being the phenomenon by which heat is trapped in lower layers of the atmosphere, resulting in a gradual warming of the planet, concomitant to the decreasing of the temperature in the stratosphere, greenhouse effect has origin as the water vapor, carbon dioxide, methane, ozone, chloro fluoro carbonates and other gases. Their concentration started to increase after 1800, so that after 1990 the average total value was with 25% higher than pre-industrial period. If the emissions would grow in the current rate, global temperatures would rise by 0.30 degree per decade, which would contribute to the desertification in the Sahel, cyclones, sea currents, etc.. An issue that raises more and more interest of the specialists but also of the business man is the waste. Endangering the environment with the transport and the storage of hazardous materials, increases the risk and the vulnerability which the modern society must cope with. With the development of the production, started by the industrial revolution, the trends were concentration, specialization in production followed by the concentrating, waste accumulation. In many cases, however, they were converted into secondary products[140], used or even in the new products. Amplification of the process product specialization resulted in obtaining waste more complex and dangerous, increasing the risks derived from their existence simply.
- The tourism practiced unbalanced, irrational, can lead to excessive concentration of population in certain areas and endangering the ecosystem concerned.
- Energy production had little influence on the ozone layer over the range examined, however, the negative impact on the increased climate change; the energy production is an important cause of increasing air pollution, which, between 1987 -2007, has spreaded the globe.
- The transports had a bad contribution to the ozone layer in 1987 slightly were improved in 2007; on the climate change, the negative effects of gas emissions from transport were multiplied, in 1987 the transports have negatively acted on the air pollution (through emissions CO, PM, NOx) and in 2007 had a different impact from the one region to the another, from the one pollutant to the another. The consequences of displacement of the vehicles are: harmful gas emissions, recycled waste production, pollution concentration in large urban, the adverse effects on human health. Although the highest rate of increase in the number of cars has been registred in Europe, followed by Asia-Pacific region, the highest number of cars hold Europe and North America. Air quality is threatened in the developing countries, particularly where concerns and means of defense, protecting human health and living environment are minimal. Also, pollution from the maritime transport of petroleum products, mineral or other is very serious. In case of

[140] Giarini, O., Certainty Limits - Facing Risks in the New Economy of Services, Edimpress-Camro Publisher, Bucureşti, 1996, p.89-91.

stranding transportation such, the vegetation and the marine life are the first affected; plus the natural agents that can move to the coast oil stains, chemicals, etc.., causing the marine disasters.
- The negative impact of the consumption basic goods on the ozone layer decreased between 1987-2007 - and was maintained on climate change; on the other hand if the amount of biomass in 1987 was on air pollution effects in general in 2007 its growth has occurred mainly in rural areas. For luxury goods, consumption effects of ozone damage were decreased in terms of gravity; climate change has evolved from "major" to "disemination of the growing emissions"; on the air pollution have negative effects in growth.
Simultaneously with the accumulation of industrial waste, widening consumption for the growing population whose needs are more difficult to satisfy, but it meant increasing quantitative and qualitative waste produced. The harmful effects of the existence of waste whether sterile or industrial, municipal, special (for incineration), toxic, nuclear, etc., can mention: disasters or sinister caused by the defective products continue functioning, whose physical wear is very high (explosions, fires), contamination of water, soil, air source due to the storage or discharge into areas that are not allowed, the visual pollution caused to the natural landscape and the proximity of some institutions, monuments, hotels, etc. All these risks come within the human domain and have adversely effects on the individual health and life. Furthermore, the incidences of the visual pollution on the individual are reflected in the risk of image on some sightseeing, cultural and non repetition of experience what obviously has repercussions on the company, organization. Because of the many effects arising from their existence, one of the major concerns of the current services economy is the prevention of waste and recycling
The minimizing of the business risks stemming from the global businesses, affecting the natural environment can be achieved using the instruments: technical progress and an operational regulatory environment. Thus, in recent years, the scientific researches and the technical innovations offer solutions to mitigate the downward trend of the ozone layer, more efficient use of energy sources and reducing dynamics of the climate change and as well the pollution shrinkage; the legal and institutional environment has evolved from a formal presence in tracking of the health effects of global business world to a living presence, active presence, mainly in developed countries.

Effects of natural risk – causes of business risk
From all the range of risks which operating in one way or another on the individual or his social environment, the pure risks, based on natural, have the most severe consequences and are the less frequent. Some of them have already made their presence felt by very serious consequences, others with slower progress will be felt by the future generations. Due to the multitude of these types of risk and their cost to society, is more acutely felt need to develop worldwide solidarity, the creation and strengthening global awareness that human activities are becoming increasingly interdependent.
Like pure risks based on natural, the natural risks with anthropic determination are systemic conditioned with other risks, both natural and entrepreneurial. Causal links between the changes in the natural environment and the anthropic environment can be highlighted as follows[141]:
- The air pollution in the form of the concentration and the deposition of pollutants recorded in the period 1987-2007, decreased in developed countries and maintenance in the developing countries; the exposure to this type of risk increased in developing countries and declined in the developed countries; effects on human welfare are on: health (respiratory and heart diseases, premature death and morbidity, asthma in children), the food security (low yield crops), the security and the physical security (border conflicts), the socio-economic situation, other effects (lower tourism potential, visibility, atmospheric effects, etc.).. The soil acidification and

[141] Global Environment Outlook GEO - 4, Environment for development, UNEP, 2007, p.50-51

eutrophication effects are: food security - increasing decline of forests and ecosystems, the minimizing of the potential of fisheries, safety and physical security - corrosion of materials and loss of biodiversity, socio-economic development - infrastructure maintenance costs, the decreasing of the touristic potential, etc.. Formation and concentration tropospheric ozone in the northern hemisphere will increase the effects: on the environment - exposure of the cultures, of the human and natural ecosystems and further on the health of individuals - respiratory problems, mortality and morbidity; on physical security - loss of biodiversity; regarding the economic and social status - low income, especially to the poors, all kinds of restrictions.

Increasing the levels of concentration of toxic air (heavy metals, PAHs, VOCs) has effects on air quality and for the people - cancer diseases; the food security is threatened by the contamination of food and socio-economic impact involves increasing health costs. Increasing the emissions of POPs will increase the deposition in natural ecosystems, the bioaccumulation in the food chain threatening food security, human health, the sustainability of fishery resources and in terms of socio-economic - minimizing trading of the fish species, increase the vulnerability of polar bears, etc.. For developing countries, pollution, generally, air, in particular, affects the exposure of population, growing of the mortality and a respiratory diseases and economically - the vulnerability of poor communities, impact on women and children.

- Climate change manifested by the stabilization of GHG concentrations will have consequences on the environment, such as: increasing of the air and water temperature, extreme weather events, precipitation, melting ice, ocean acidification; to the people are estimated the deaths amid stress, the different types of disease. The economic and social risks are: the risk of starvation, the decreasing of the agricultural production, the increasing of vulnerability of people, especially the poor, loss of property, threats to the livelihoods of communities. A survey of the managers' perceptions regarding the effects of climate change on business done in 2008[142], shows four types of risk considered significant: legal risk, physical risk, the risk of image, the risk of litigation. Of these, the legal risk was found the most dangerous followed by the physical risk; the legal risk has a high level in the fields of automotive, construction materials industry, mining, metallurgy, oil and gas, transportation, utilities; a medium level in: aviation, chemical industry, financial sector, manufacturing. The physical risk is assessed as having high negative effects in the domains: agriculture, forestry, health, pharmaceuticals, insurance, tourism and the average level in construction, construction materials industry, finance, retail. The risk of image is claimed as medium in the in aviation domain. The natural risk produced in business environment requires makers to develop strategies to prevent, counteract it. The preparedness of the businesses environment to minimizing the impacts possible of the natural risks is considered to be very good in the fields of telecommunications, food and beverages, chemicals and very weak in transport, health, tourism, aviation, financial sector.

- The decreasing of ozone from stratosphere and maintaining the concentrations of ozone in the stratosphere will result in maintaining the radiations, ozone depletion at the poles and for people - cancer of the skin, eyes and immune system hazards. Food safety will be affected by decreasing fish stocks (especially phytoplankton) and food production. From the perspective of socio-economic impact translates into: decreased time spent outdoors, changing lifestyles, increasing spending to prevent exposure to ultraviolet radiation, etc..
- Loss of biodiversity and degradation of the ecosystems, as natural risk with anthropic determination, have the impact on business the different types of risk, such as[143]:
- physical risk (reflected in reduced productivity, failure or shortage of resources and increased costs, particularly for companies that depend on the potential of plant, animal genetic material, etc., interruption or cessation of activities due to natural disasters products);

[142] Climate changes your business, KPMG's Review of the business risks and economic impacts at sector level, 2008, p.36-39

[143] Biodiversity and business risk, World Economic Forum, Jan.2010, p.5, 8, 9

- legislative risk (manifested by restrictions on access to land and resources affected by natural risks, litigation, governmental limitations on the exploitation of resources, higher prices for products from areas threatened by loss of biodiversity);
- market risk (manifested mainly by changing consumer behavior);
- the risk of image (of firms exploiting resources or produce outputs with a negative impact on biodiversity);
- financial risk as a result of reduced cash flow, increasing the costs to firms concerned; risks on the marketing channels (the control of channels, increased costs).

Among the economic consequences of biodiversity loss and degradation of ecosystems, it notes: loss of bee colonies in the U.S., in 2007, meaning the $ 15 billion financial losses; the soil erosion in Europe produces the economic damage of 53% per year; the pests cause the damages to the U.S., UK, Australia, India, Brazil, South Africa, agricultural, around of the 100 million dollars annually.

Of pure risks, natural disasters are the most serious; the volcanic eruptions lead to amplification of tidal level, lava flow, deaths in overpopulated countries, clouds of ash; the Katrina hurricane[144] hit the U.S. in September 2005 causing physical damage, economic, financial, psychological - most oil instalations from the Gulf of Mexico were shut down, were increased the global oil prices, fell the GDP of U.S., it lost approx. 500,000 jobs in the New Orleans area and Gulf of Mexico, the financial losses estimated to the $ 100 billion. Eyjafjälla eruption volcano in March 2010 caused the loss of European tourism 1.72 billion aviation industry losses of 200 million and closed the airspace of 12 European countrie; by delays to the employees there have been losses of labor productivity € 1.5 million, suffered losses in areas: air transport industry, tourism, oil prices, courier service and perishable goods[145].

The management of the natural risk should be included in the overall strategy of the firm[146]; a study realized by l'Economist Intelligence Unit in March 2008, on a number of 320 managers worldwide, reflect that 41% of respondents take into account the natural risks in launching policies new products, 32% in the selection of suppliers or customers, 26% in the penetration of foreign markets and 19% in shares acquisition or merger. Managing these risks depends on the quality of national business environment, the type of activity, the company's history and, not least, the ability of the entrepreneur.

Conclusions

Even if the action of natural factors can not be stopped, may be limited. Managers are required to apply effective risk management programs to reduce the frequency of occurrence and the severity of the risk. As it concerns the consumer, the achievement or the not of the natural risk and the perception on his consequences are dependent to the specific natural, economic, social and political conditions from the environment in which he lives and the particularities cultural, behavioral, personality, lifestyle desired or accepted, individual. Both for the companies and for the consumers, preventing, countering, mitigation of the natural risk effects and the relationships with mutual determination with the business risk is possible by using the information correct and lucid. Management of natural risk is based on the undeniable reality that the natural environment and managing this relationship supports the development of business and default risk-taking business. Management of business risk may not be operational without identification, assessment, treatment and control of all types of risk facing the company, primarily, to natural. Is a two-way relationship.

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[144] http://www.wall-street.ro/

[145] www.financiarul.ro/

[146] Roussel, F., Le risque environnemental est encore trop négligé dans les entreprises, Gestion des risques, Actu-Environnement.com - 28/08/2008

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